In the Specification:

On page 1, after the title insert the following:

RELATED APPLICATIONS

This is a U.S. national stage of application No. PCT/DE2003/003157, filed on 23 September 2003.

This patent application claims the priority of German patent application nos. 102 45 634.8 and 102 53 911.1, filed 30 September 2002 and 19 November 2002, respectively, the disclosure content of which is hereby incorporated by reference.

FIELD OF THE INVENTION

On page 1, before line 15, insert the following heading:

BACKGROUND OF THE INVENTION

On page 2, before line 24, insert the following heading:

SUMMARY OF THE INVENTION

On page 2, amend the paragraphs beginning on lines 24 and 29 as follows:

~~Therefore, it is an~~ One object of the present invention is to provide ~~specify~~ a radiation-emitting semiconductor component which can be produced with a high area yield from wafers and which is suitable for high light powers.

~~Furthermore, it is an~~ Another object of the invention is to provide ~~specify~~ a method for producing ~~the~~ such a component.

On page 2, delete the paragraph beginning on line 32 through line 38 in its entirety.

On page 3, delete the paragraph beginning on line 1 through line 12 in its entirety and inset the following:

This and other objects are attained in accordance with one aspect of the present invention directed to a radiation emitting semiconductor component comprising a radiation-transmissive substrate with inclined side areas and having a refractive index (n1). The radiation generating layer is arranged on an underside of the substrate and has a refractive index (n2), wherein the refractive index of the substrate (n1) is greater than the refractive index (n2) of the radiation generating layer. The difference between the refractive indexes results in an unilluminated substrate region into which no photons are coupled directly from the radiation generating layer. The substrate has essentially perpendicular side areas in the unilluminated region.

On page 12, before line 1, insert the following heading:

BRIEF DESCRIPTION OF THE DRAWINGS

On page 12, before line 32, insert the following heading:

DETAILED DESCRIPTION OF THE DRAWINGS

Amend the paragraph beginning on page 12, line 32 through page 13 line 23 as follows:

Figure 1 shows a substrate 1, which is covered by a radiation-generating layer 2 on the underside. The substrate 1 has a width B on the underside. Furthermore, the substrate 1 has a reduced width b on the top side. Furthermore, the substrate 1 has inclined side areas 3. It is particularly advantageous if the width B of the underside of the substrate has a value of between 300 and 2000 μm. A substrate width B of 1000 μm will be taken as a basis for the further considerations. The inclined side areas 3 form an angle α with the underside of the substrate. Depicted in complementary fashion with respect to said angle α is the angle θ, which the inclined substrate areas form with the normal to the substrate (said normal being depicted in dashed fashion) and which is plotted in Figure 2, where the coupling-out efficiency is discussed. A contact layer 17 is applied on the underside of the radiation-generating layer 2, which contact layer may be a p-type mirror contact in the case of gallium nitride as basic material for the radiation-generating layer 2. Additional materials that are required along with the basic material to create a radiation-generating layer are well known by anyone with ordinary skill in the art. This means that the underside of the radiation-generating layer 2 is assigned to the positive electrical contact. The p-type mirror contact fulfils two functions in this case. Firstly, it provides for a large-area, low-resistance contact connection of the radiation-generating layer 2. Secondly, said contact layer 17 also has reflective properties, that is to say that the light generated in the radiation-generating layer 2 is reflected by the contact layer 17 and, consequently, can be coupled out from the component through the substrate 1.

On page 13, amend the paragraph beginning on line 25 as follows:

As can be gathered from Figure 1, the radiation-generating layer 2 is not applied over the whole area on the underside of the substrate 1. Rather, a free edge 7 is present. The free edge 7 is not covered by the radiation-generating layer 2. It will be assumed below that the material of the substrate 1 is hexagonal silicon carbide. However, other suitable materials for GaN-based layers as well as for other radiation-generating layers are well known to anyone of ordinary skill in the art. ~~are also taken into consideration.~~ It will furthermore be assumed that the material of the radiation-generating layer 2 is gallium nitride or a semiconductor material which is based on gallium nitride and is suitable for the production of light-emitting diodes which emit in the blue spectral range or in semiconductor lasers.

On page 19, amend the paragraph beginning on line 18 as follows:

The thickness dL of the interconnects 10 shown in Figure 3 is essentially determined by the layer thickness of the soldering area 16 arranged in the center of the squares 11, which has to have a specific minimum thickness in order to ensure reliable soldering. Since it is advantageous to apply the interconnects 10, the connecting interconnects 10a and the soldering area 16 to the top side of the substrate 1 in a single process or mask step, it is likewise advantageous to produce the interconnects 10, the connecting interconnects 10a and also the soldering area 16 in the same layer thickness. In another possible process, it might also be advantageous to make the soldering area 16 thicker than the interconnects 10 or the connecting interconnects 10a, since bonding is not effected on the interconnects 10, 10a and, consequently, the latter can also be made thinner in order to save material, by way of example.

On page 19, amend the paragraph beginning on line 37 through page 20, line 22 as follows:

Figure 6 shows a substrate 1, to the underside of which a radiation-generating layer 2 is applied. Moreover, an electrical contact layer 17 is applied on the underside of the radiation-generating layer 2. The radiation-generating layer 2 has a bevelled side edge 8, which is suitable for reflecting light generated in the radiation-generating layer 2 (along the arrow direction, for example) into the substrate 1 and from there upward in the desired direction and, consequently, for increasing the luminous efficiency of the component further in an advantageous manner. For the reflection at the bevelled side edge 8, it may be advantageous, depending on the difference in refractive index between the radiation-generating layer 2 and the surrounding medium, to utilize a total reflection at said side edge. However, it is also possible, independently of the total reflection, to apply a reflective material 9 to the bevelled side edge 8 and thereby to effect reflection of the radiation in the desired direction. In order to prevent an electrical short circuit between the substrate 1 and the contact area 17, it is also highly expedient, if appropriate, to apply an electrical insulating layer between the reflective material 9, which is advantageously silver or aluminum, and the contact area 17 and/or between the reflective material and the substrate 1 and/or between the reflective material 9 and the radiation generating layer 2. Said insulating layer may be silicon nitride, by way of example. Said insulating layer may be silicon nitride, by way of example.

On page 20, amend the paragraph beginning on line 29 as follows:

Figure 7 shows a substrate 1 during the production of a multiplicity of individual substrates 15 which in turn form the basis for a substrate 1 in accordance with Figure 1. V-shaped trenches 14 are cut into the large substrate 1, a V-shaped saw blade advantageously being used. However, the large substrate 1 is not sawn through entirely, rather a residual thickness dr (which is the same as h in Fig. 1) of the substrate remains. Said residual thickness dr may be 20 µm, by way of example, following the example of Figure 1. Afterward, the individual substrates 15 may be singulated by breaking or by straight sawing.

On page 21, insert the following as the last paragraph:

The scope of protection of the invention is not limited to the examples given hereinabove. The invention is embodied in each novel characteristic and each combination of characteristics, which includes every combination of any features which are stated in the claims, even if this combination of features is not explicitly stated in the claims.